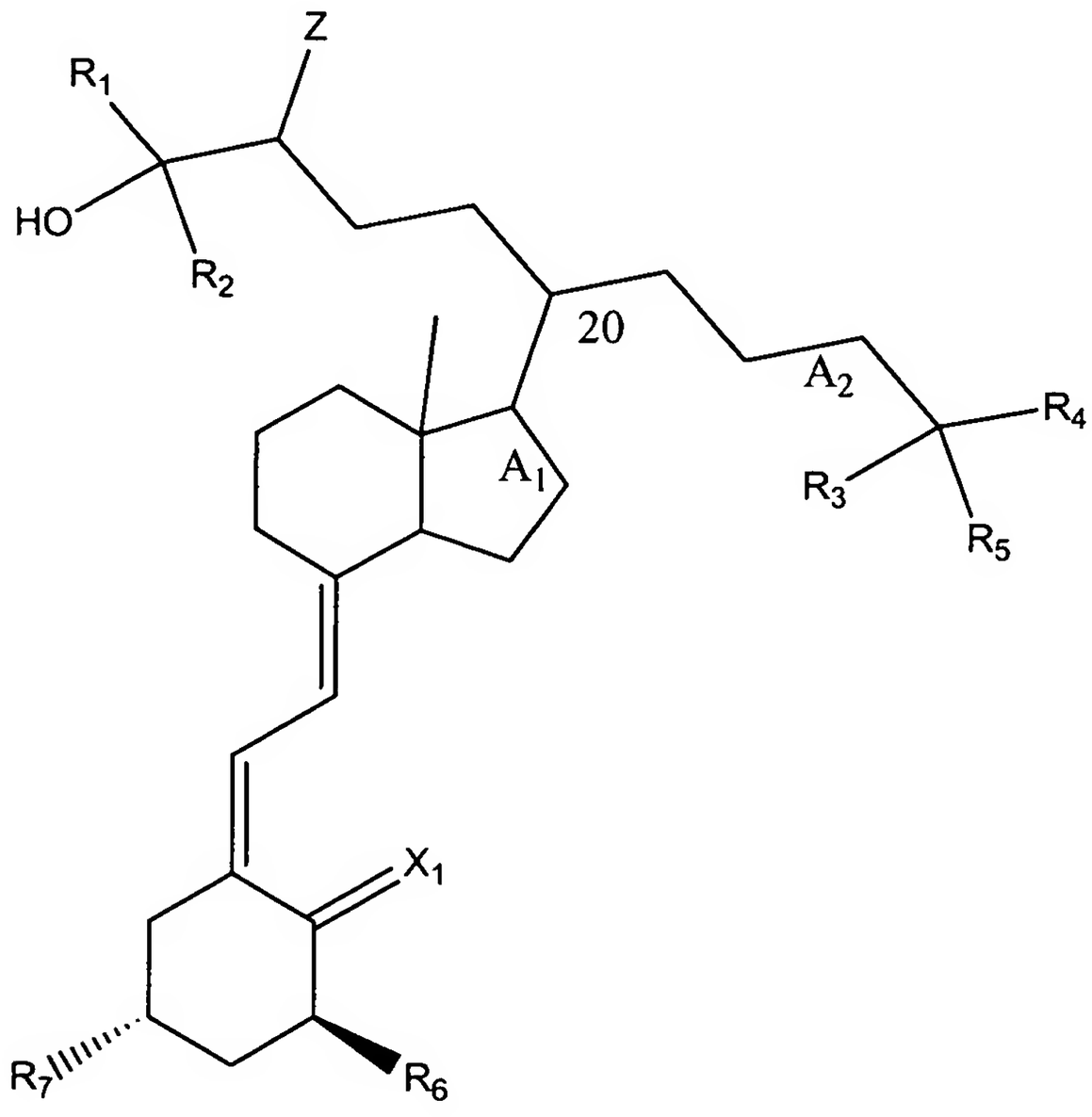
In the Claims:

Please cancel without prejudice or disclaimer claims 37-46, 48-63, 65-77, 79, 81, 83-84, 86-88, 92-97, 100 and 103 and please amend claims 21, 24, 34, 36, 47, 64, 78, 80, 82, 85, 89, 91, 98 and 101.

The following listing of claims will replace all previous claims and listings in the application

1. (Original) A vitamin D_3 compound having formula I:



I

wherein:

A_1 is a single or double bond;

A_2 is a single, a double or a triple bond;

R_1, R_2, R_3 and R_4 are each independently C_1-C_4 alkyl, C_1-C_4 deuteroalkyl, hydroxyalkyl, or haloalkyl;

R_5, R_6 and R_7 are each independently hydroxyl, $OC(O)C_1$-C_4 alkyl, OC(O)hydroxyalkyl, or OC(O)haloalkyl;

the configuration at C_{20} is R or S;

X_1 is H_2 or CH_2;

Z is hydrogen when at least one of R_1 and R_2 is C_1-C_4 deuteroalkyl and at least one of R_3 and R_4 is haloalkyl or when at least one of R_1 and R_2 is haloalkyl and at least one of R_3 and R_4 is C_1-C_4 deuteroalkyl; or Z is –OH, =O, -SH, or -NH_2;
and pharmaceutically acceptable esters, salts, and prodrugs thereof.

2. (Original) The compound of claim 1, wherein A_1 is a single bond.

3. (Original) The compound of claim 1, wherein A_2 is a single bond.

4. (Original) The compound of claim 1, wherein A_2 is a triple bond.

5. (Original) The compound of claim 1, wherein R_1, R_2, R_3, and R_4 are each independently methyl or ethyl.

6. (Original) The compound of claim 1, wherein R_1, R_2, R_3, and R_4 are each independently C_1-C_4 deuteroalkyl or haloalkyl.

7. (Original) The compound of claim 1, wherein R_5 is hydroxyl.

8. (Original) The compound of claim 7, wherein R_6 and R_7 are hydroxyl.

9. (Original) The compound of claim 7, wherein R_6 and R_7 are each $OC(O)C_1$-C_4 alkyl.

10. (Original) The compound of claim 9, wherein R_6 and R_7 are each acetyloxy.

11. (Original) The compound of claim 1, wherein X_1 is H_2.

12. (Original) The compound of claim 1, wherein X_1 is CH_2.

13. (Original) The compound of claim 1, wherein Z is hydrogen when at least one of R_1 and R_2 is C_1-C_4 deuteroalkyl and at least one of R_3 and R_4 is haloalkyl or when at least one of R_1 and R_2 is haloalkyl and at least one of R_3 and R_4 is C_1-C_4 deuteroalkyl; Z is
–OH, =O, -SH, or -NH_2 when X_1 is CH_2; Z is –OH, =O, -SH, or -NH_2 when X_1 is H_2 and the configuration at C_{20} is S; or Z is =O, -SH, or -NH_2 when X_1 is H_2 and the configuration at C20 is R.

14. (Original) The compound of claim 1, wherein Z is hydrogen.

15. (Original) The compound of claim 13, wherein Z is –OH.

16. (Original) The compound of claim 1, wherein Z is =O.

17. (Original) The compound of claim 1, wherein X_1 is CH_2; A_2 is a single bond; R_1, R_2, R_3, and R_4 are each independently methyl or ethyl; and Z is –OH.

18. (Original) The compound of claim 1, wherein X_1 is CH_2; A_2 is a single bond; R_1, R_2, R_3, and R_4 are each independently methyl or ethyl; and Z is =O.

19. (Original) The compound of claim 1, wherein X_1 is H_2; A_2 is a single bond; R_1, R_2, R_3, and R_4 are each independently methyl or ethyl; the configuration at C_{20} is S; and Z is –OH.

20. (Original) The compound of claim 1, wherein X_1 is H_2; A_2 is a single bond; R_1, R_2, R_3, and R_4 are each independently methyl or ethyl; and Z is =O.

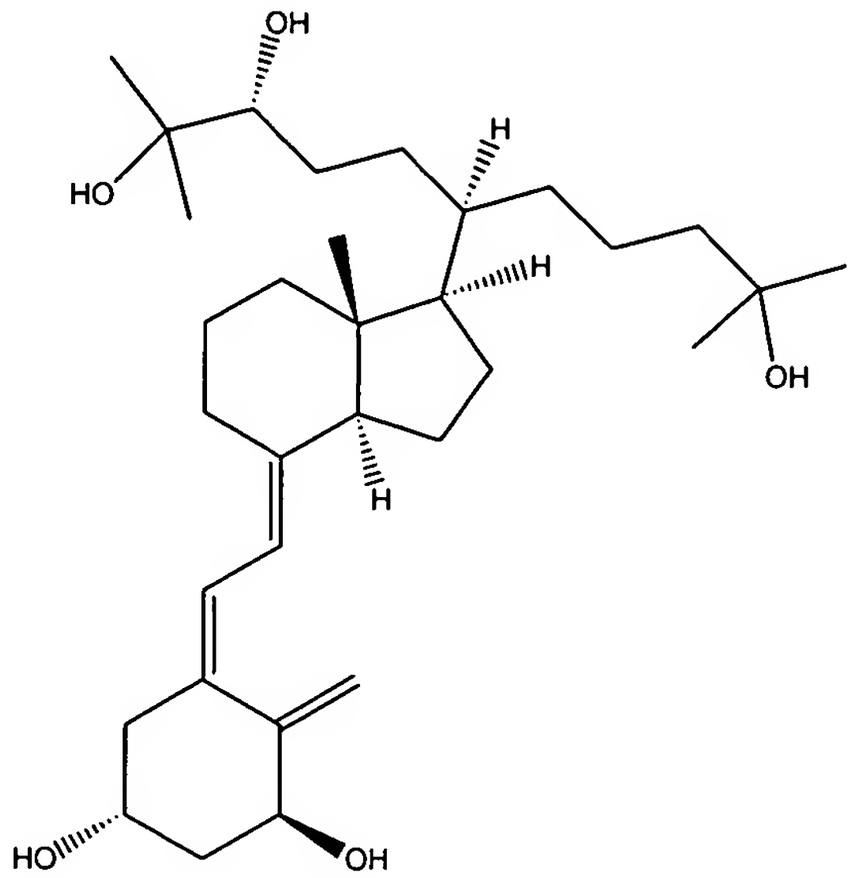
21. (Currently Amended) The compound of ~~any of~~ claim[s] 17 ~~to 20~~, wherein R_1, R_2, R_3, and R_4 are each methyl.

22. (Original) The compound of claim 1, wherein X_1 is H_2; A_2 is a triple bond; R_1 and R_2 are each C_1-C_4 deuteroalkyl; R_3 and R_4 are each haloalkyl; and Z is hydrogen.

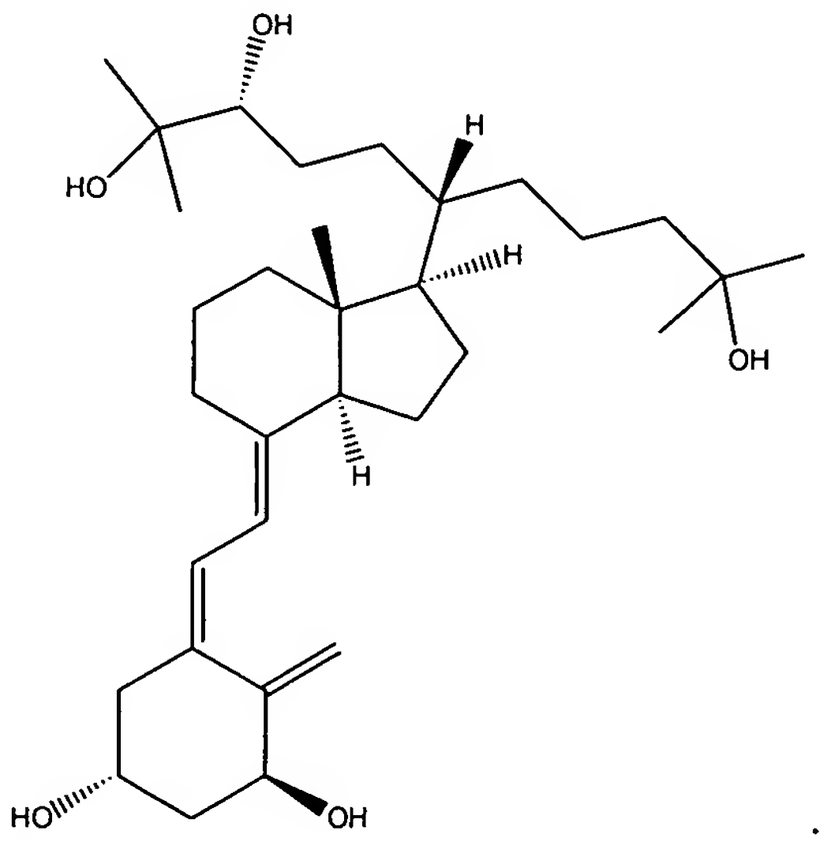
23. (Original) The compound of claim 1, wherein X_1 is CH_2; A_2 is a triple bond; R_1 and R_2 are each C_1-C_4 deuteroalkyl; R_3 and R_4 are each haloalkyl; and Z is hydrogen.

24. (Currently Amended) The compound of claim 22 [or 23], wherein R_1 and R_2 are each deuteromethyl and R_3 and R_4 are each trifluoromethyl.

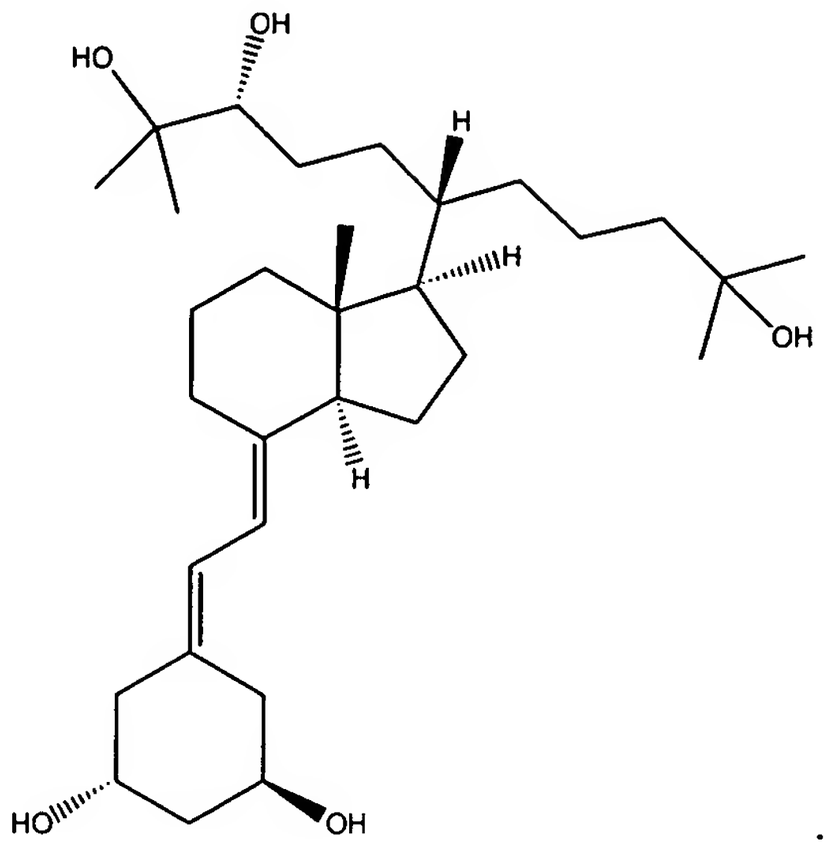
25. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-21-(2R,3-dihydroxy-3-methyl-butyl)-20R-cholecalciferol:



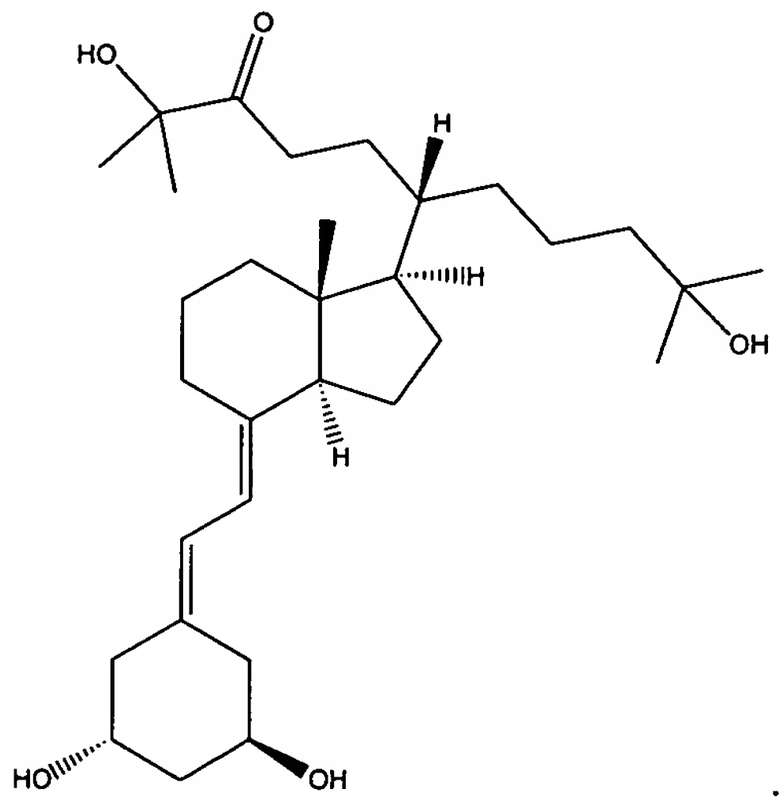
26. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-21-(2R,3-dihydroxy-3-methyl-butyl)-20S-cholecalciferol:



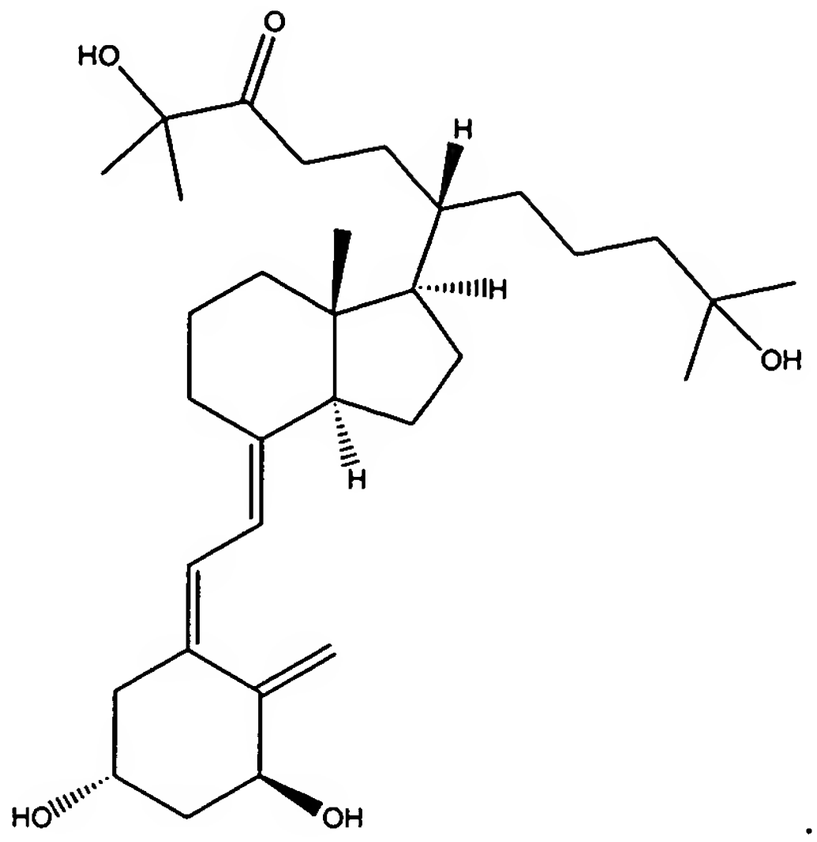
27. (Original) The compound of claim 21, wherein said compound is1, 25-Dihydroxy-21-(2R,3-dihydroxy-3-methyl-butyl)-20S-19-nor-cholecalciferol:



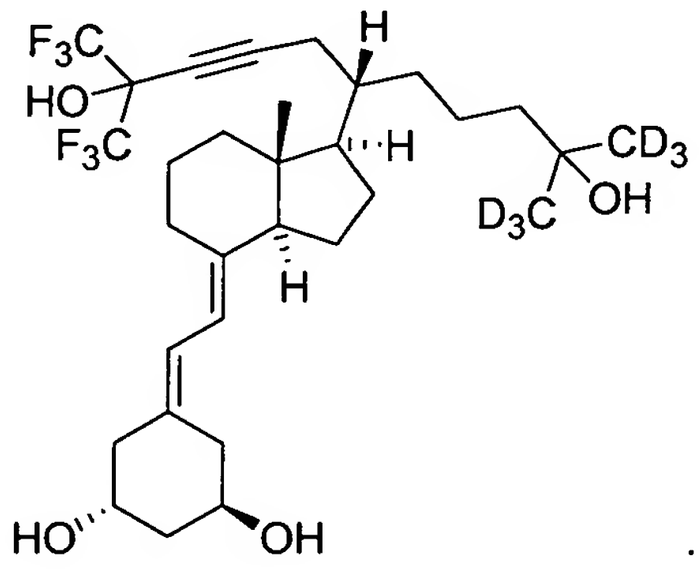
28. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-20S-21-(3-hydroxy-3-methyl-butyl)-24-keto-19-nor-cholecalciferol:



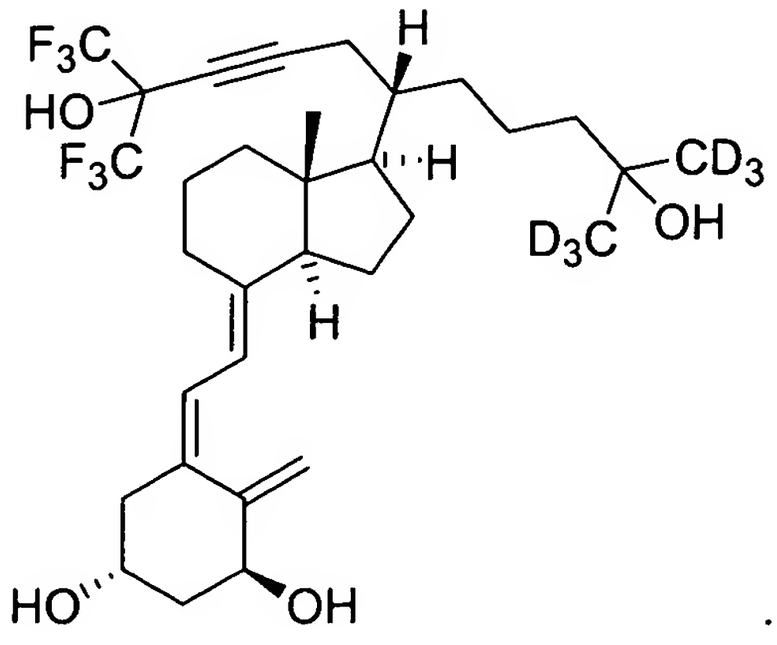
29. (Original) The compound of claim 21, wherein the compound is 1,25-Dihydroxy-20S-21-(3-hydroxy-3-methyl-butyl)-24-keto-cholecalciferol:



30. (Original) The compound of claim 24, wherein the compound is 1,25-Dihydroxy-21(3-hydroxy-3-trifluoromethyl-4-trifluoro-butynyl)-26,27-hexadeutero-19-nor-20S-cholecalciferol:



31. (Original) The compound of claim 24, wherein the compound is 1,25-Dihydroxy-21(3-hydroxy-3-trifluoromethyl-4-trifluoro-butynyl)-26,27-hexadeutero-20S-cholecalciferol :



32. (Original) The compound of claim 1, wherein the haloalkyl is fluoroalkyl.

33. (Original) The compound of claim 32, wherein the fluoroalkyl is fluoromethyl or trifluoromethyl.

34. (Currently Amended) A method for treating a subject for a vitamin D_3 associated state, comprising administering to said subject an effective amount of a ~~Gemini~~ vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33], such that said subject is treated for said vitamin D_3 associated state.

35. (Original) The method of claim 34, wherein said vitamin D_3 associated state is a disorder characterized by an aberrant activity of a vitamin D_3-responsive cell.

36. (Currently Amended) A method for treating a subject for a urogenital disorder, comprising administering to said subject an effective amount of a ~~Gemini~~ vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33], such that said subject is treated for said ~~urogential~~urogenital disorder.

Claims 37 – 46 (Cancelled)

47. (Currently Amended) The method of claim 35, wherein said disorder is selected from the group consisting of a disorder compris[es]ing an aberrant activity of a hyperproliferative skin cell, a disorder comprising an aberrant activity of an endocrine cell, secondary hyperparathyroidism, a disorder comprising an aberrant activity of a bone cell, cirrhosis, chronic renal disease, neoplastic disease, neuronal loss and a disorder characterized by an aberrant activity of a vitamin D_3-responsive smooth muscle cell.

Claims 48 - 63 (Cancelled)

64. (Currently Amended) A method of inhibiting transplant rejection in a subject comprising administering to said subject a ~~Gemini~~ vitamin D3 compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate the expression of an ILT3 surface molecule, thereby inhibiting transplant rejection in said subject.

Claims 65-77 (Cancelled)

78. (Currently Amended) A method of ameliorating a deregulation of calcium and phosphate metabolism, comprising administering to a subject a therapeutically effective amount of a

vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33], so as to ameliorate the deregulation of the calcium and phosphate metabolism.

Claim 79 (Cancelled)

80. (Currently Amended) A method of modulating the expression of an immunoglobulin-like transcript 3 (ILT3) surface molecule in a cell, comprising contacting said cell with a vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate the expression of an immunoglobulin-like transcript 3 (ILT3) surface molecule in said cell.

Claim 81 (Cancelled)

82. (Currently Amended) A method of inducing immunological tolerance in a subject, comprising administering to said subject a vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate the expression of an ILT3 surface molecule, thereby inducing immunological tolerance in said subject.

Claims 83 – 84 (Cancelled)

85. (Currently Amended) A method for modulating immunosuppressive activity by an antigen-presenting cell, comprising contacting an antigen-presenting cell with a vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate ILT3 surface molecule expression, thereby modulating said immunosuppressive activity by said antigen-presenting cell.

Claims 86 – 88 (Cancelled)

89. (Currently Amended) The method of ~~any of~~ claim[s] 34 ~~79 or 81 84~~, wherein said subject is a mammal.

90. (Original) The method of claim 89, wherein said subject is a human.

91. (Currently Amended) The method of ~~any of~~ claim[s] 34 ~~79 or 81 84~~ wherein said vitamin D_3 compound is administered in combination with a pharmaceutically acceptable carrier.

Claims 92 – 97 (Cancelled)

98. (Currently Amended) A pharmaceutical composition, comprising an effective amount a vitamin D_3 compound of ~~any of~~ claim[s] 1 [- 33] and a pharmaceutically acceptable carrier.

99. (Original) The pharmaceutical composition of claim 98, wherein said effective amount is effective to treat a vitamin D_3 associated state.

Claim 100 (Cancelled)

101. (Currently Amended) A packaged formulation comprising a pharmaceutical composition comprising a compound recited in ~~any of~~ claim[s] 1~~-33 or 70-73,~~ and instructions for use in the treatment of a vitamin D_3 associated state.

102. (Original) The packaged formulation of claim 101, wherein said compound is present in an amount effective to treat a vitamin D_3 associated state.

Claim 103 (Cancelled)